

Fish of the Grand River and Invasive Species



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Michigan Sea Grant
MSU Extension

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MICHIGAN STATE
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Overview

- Asian carp update
- Invaders on the horizon
- Grand River fish in 2013



Bighead carp caught by Illinois River commercial fishermen (INHS Photo)

Asian carp species prohibited in Michigan



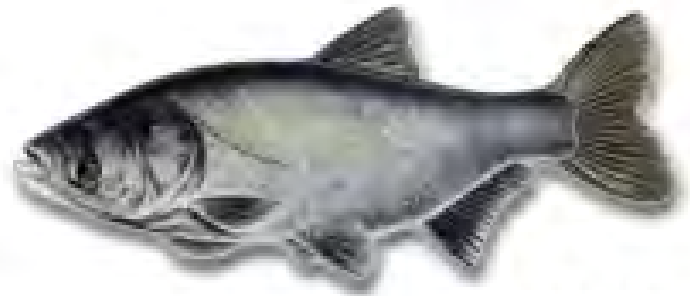
Black Carp
Mylopharyngodon piceus



Bighead Carp
Hypophthalmichthys nobilis



Grass Carp
Ctenopharyngodon idella



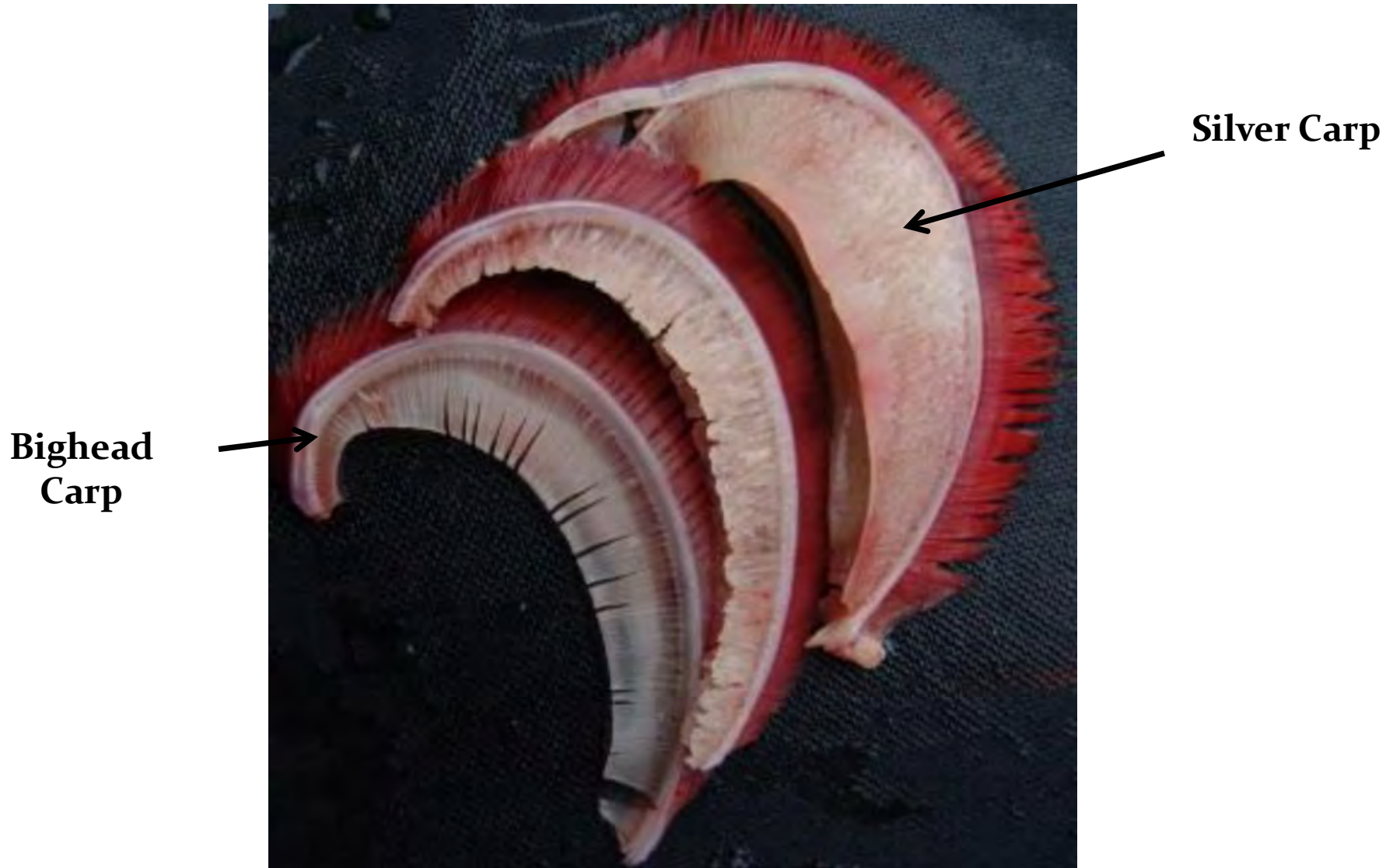
Silver Carp
Hypophthalmichthys molitrix

Asian Carp

Two filter feeding species in Chicago



Gill Rakers for Filter Feeding



Asian Carp

Two species that do not filter feed

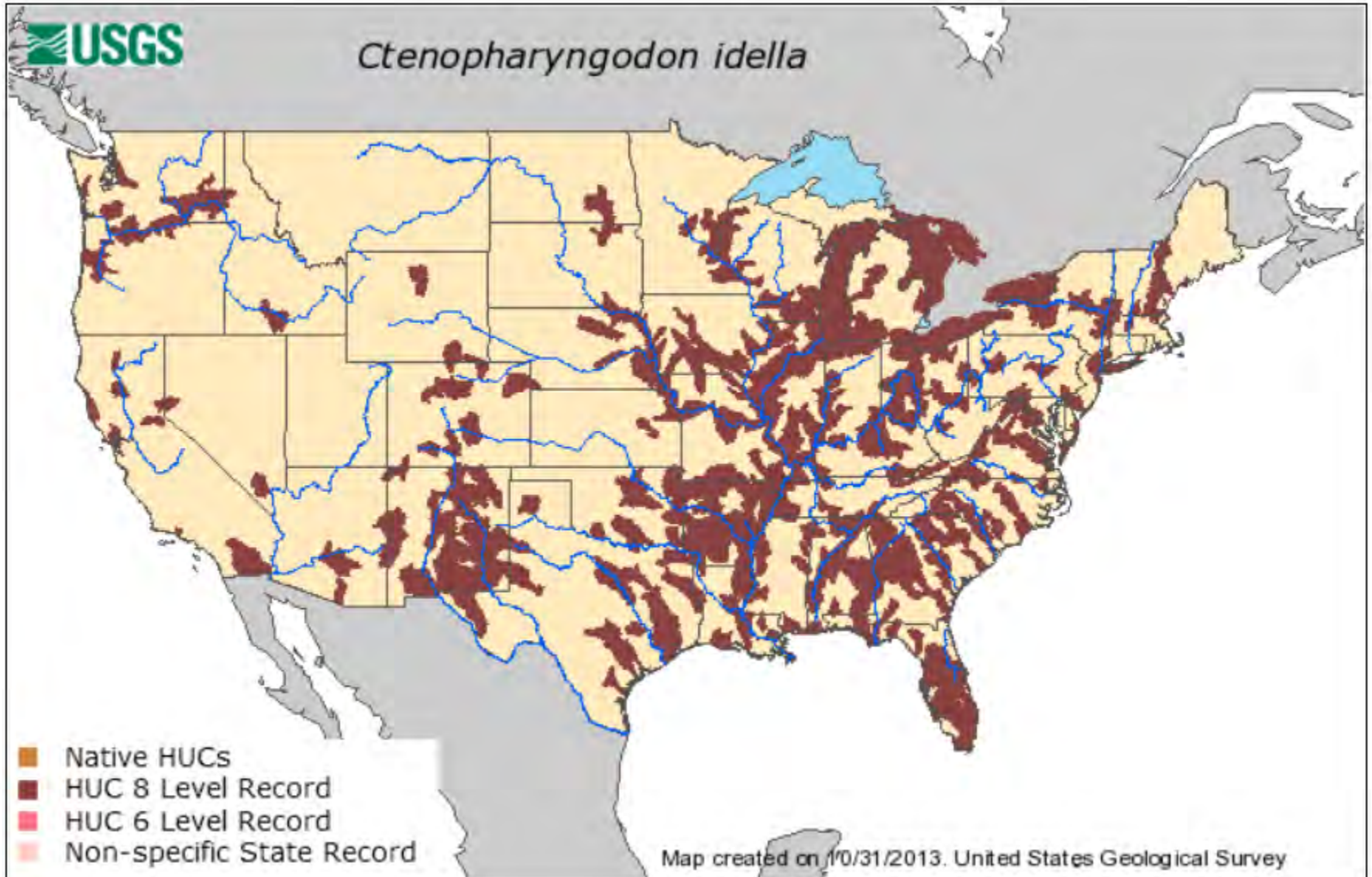




Grass Carp

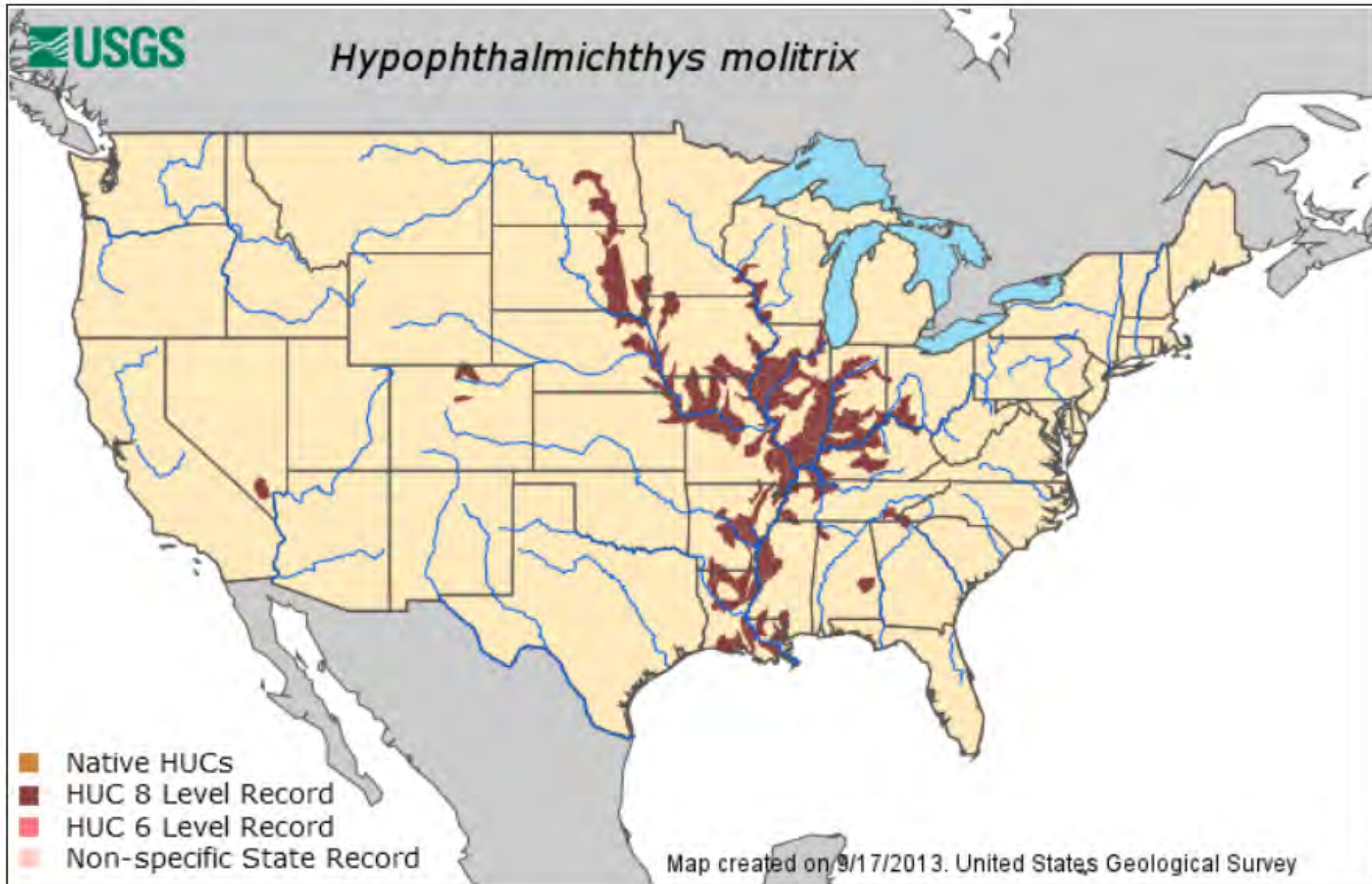
- Consumes huge quantities of aquatic plants (100 lbs/day)
- Can severely impact fish and wildlife habitat
- Feeds on desirable plants and not nuisance plants
- Can lead to nuisance algae blooms (digests <50% of food)

Grass Carp





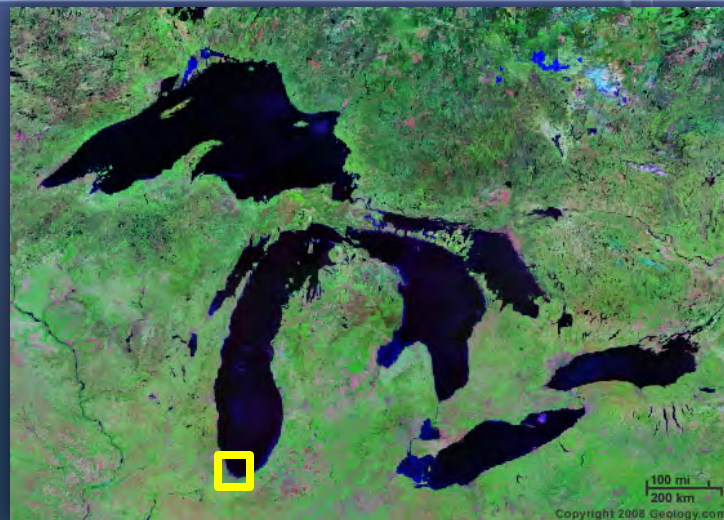
Silver Carp



Silver Carp
eDNA



2009
eDNA



Whiting

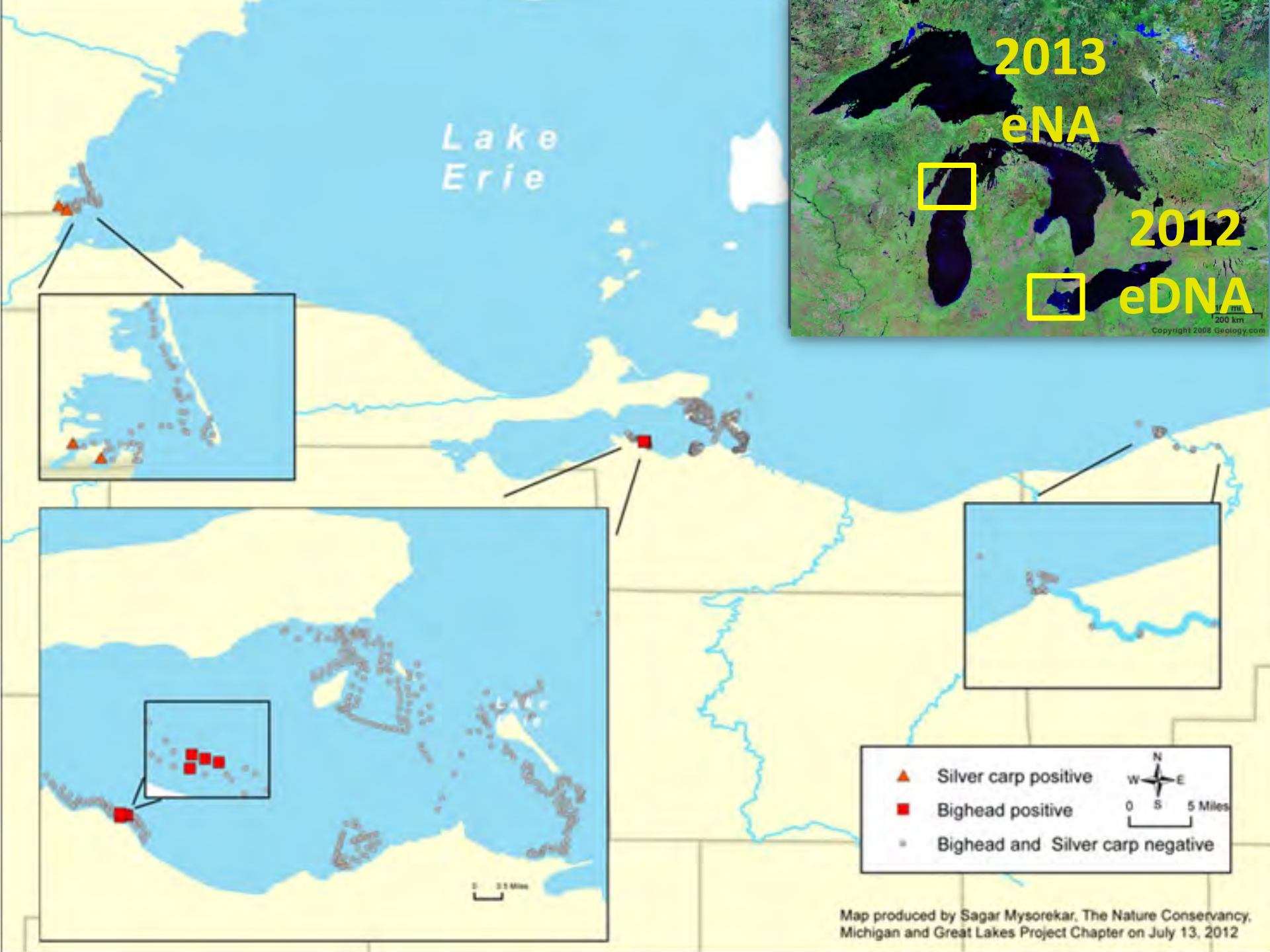
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Image NOAA
Image © 2011 TerraMetrics

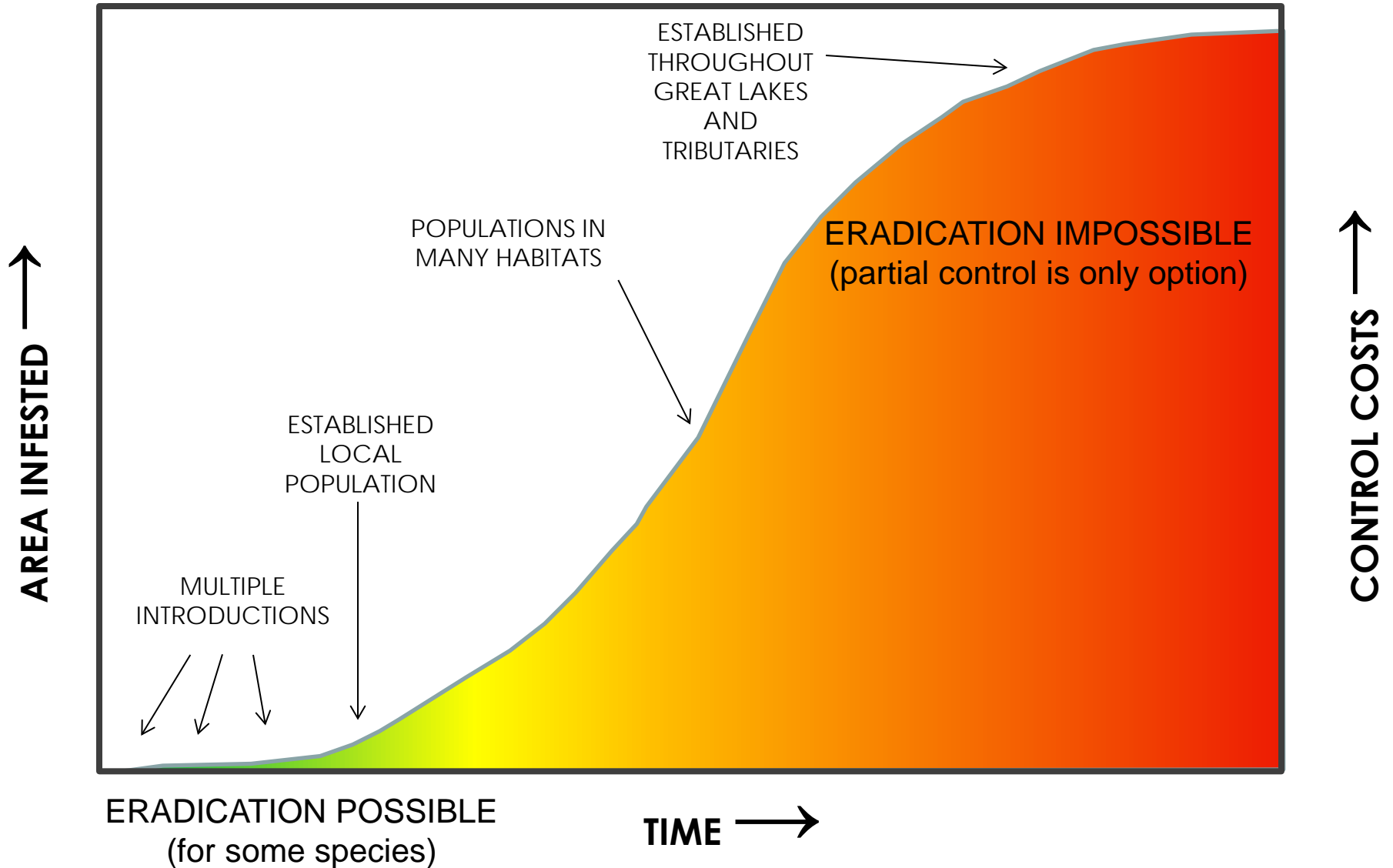
Burnham
41°43'57.35" N 87°33'21.30" W elev 587 ft

East Chicago

Eye alt 13.52 mi



AQUATIC SPECIES INVASION TIMELINE



Can Asian carp reproduce in Great Lakes?

According to the literature...

- Temperature: >64° F
- Rise in water level or turbidity
- >60 miles of free-flowing river upstream of lake/bayou
- Some exceptions noted...



Large, warm rivers with abundant backwaters and few dams provide habitat for all life stages of carp.



Figure 29. Map of Lakes Erie, Huron, St Clair, Michigan, and Superior indicating rivers lacking dams and having a minimum length of 100 km that may be suitable for spawning by Bighead (*Hypophthalmichthys nobilis*) and Silver (*H. molitrix*) carps. Map developed by C. Lowenburg, U.S. Geological Survey.

New Findings on Asian Carp Reproduction

- Temperature affects length of river needed (USGS 2013)
- Rise in water level may not be needed (Goforth et al. 2013)
- Wabash River, IN, smallest known spawning river
- Grass carp have spawned in 14 miles of Sandusky R.



2013

Characterizing Risk

Distances from Lake Michigan

37 miles Dispersal barriers ★

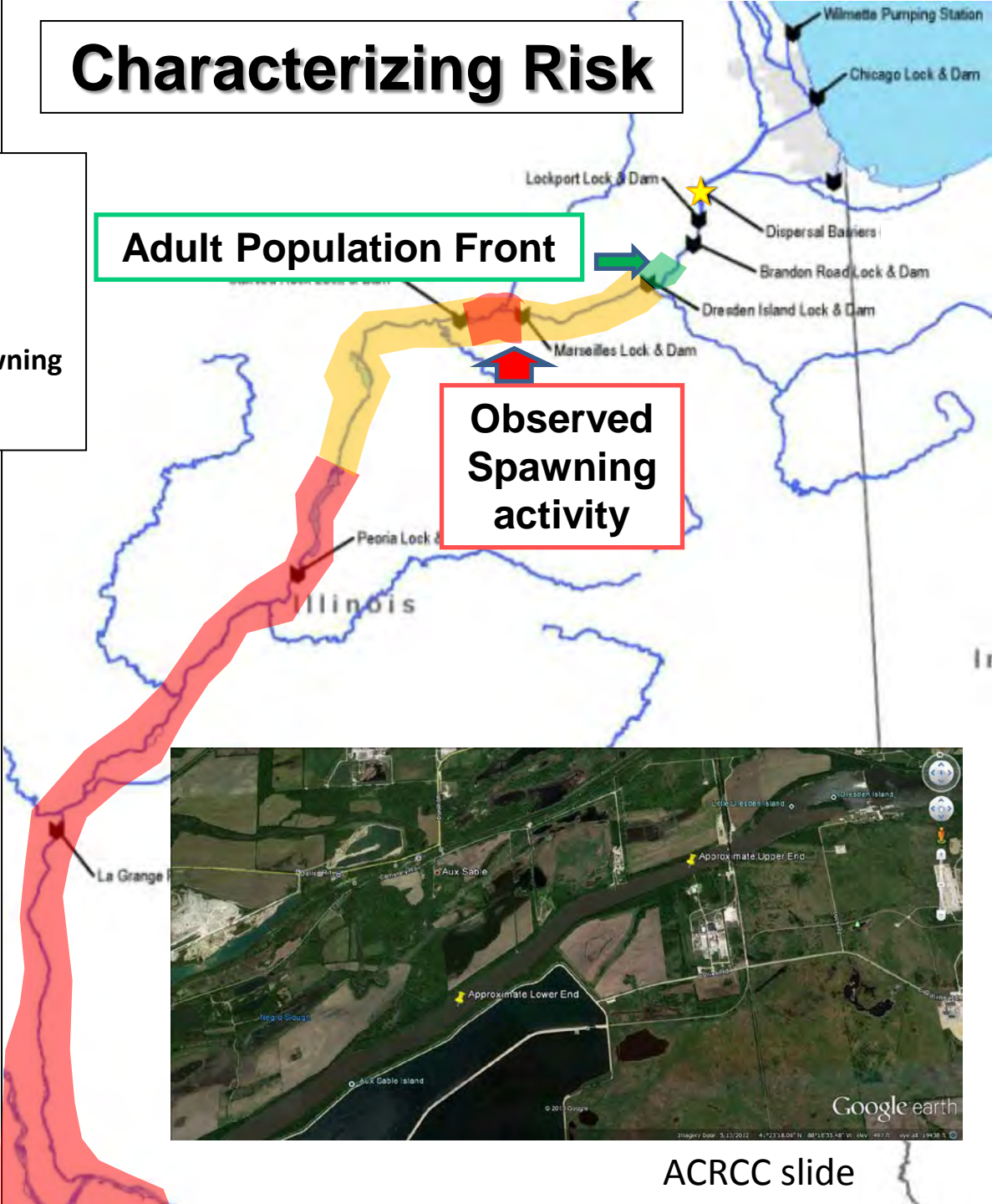
55 miles Adult Population Front

62 miles Presence of Adults/Potential Spawning

62 miles Verified Spawning

Adult Population Front

Observed Spawning activity



Areas of Concern

- 1) Verified Spawning Marseilles Pool
- 2) Verified Identification of AC eggs and larvae near Henry Illinois



news science

Asian Carp: Can't Beat Them? Eat Them

by DAVID SCHAPER

July 12, 2006 4:56 PM

**Listen**

All Things Considered



- Playlist
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- Transcript



Commercial fisherman Jeremy Fisher yanks a bighead

In the Midwest, Asian carp are making their way up the Mississippi River and its tributaries. The foreign invaders can grow to be 80 to 100 pounds. They're ravenous eaters, consuming up to 40 percent of their own body weight in plankton each day. And they're bullies, pushing out weaker, native species.

The good news: An electric barrier has kept bighead and silver carp — the two most aggressive types — from advancing beyond a lock and dam on the Illinois River, about 50 miles southwest of Chicago. For now, they have yet to enter Lake Michigan and the Great Lakes ecosystem.

But downriver, bighead and silver carp are rapidly taking over parts of the Illinois. And one way to control the population can be phrased this way: "If you can't beat 'em, eat 'em."

Asian carp markets

- Domestic markets
 - Live bighead carp get best price
 - Large frozen bigheads and silvers
- Chinese export markets
 - Mostly large bighead carp
 - Heads prized for soup
 - ~30 million pounds/year

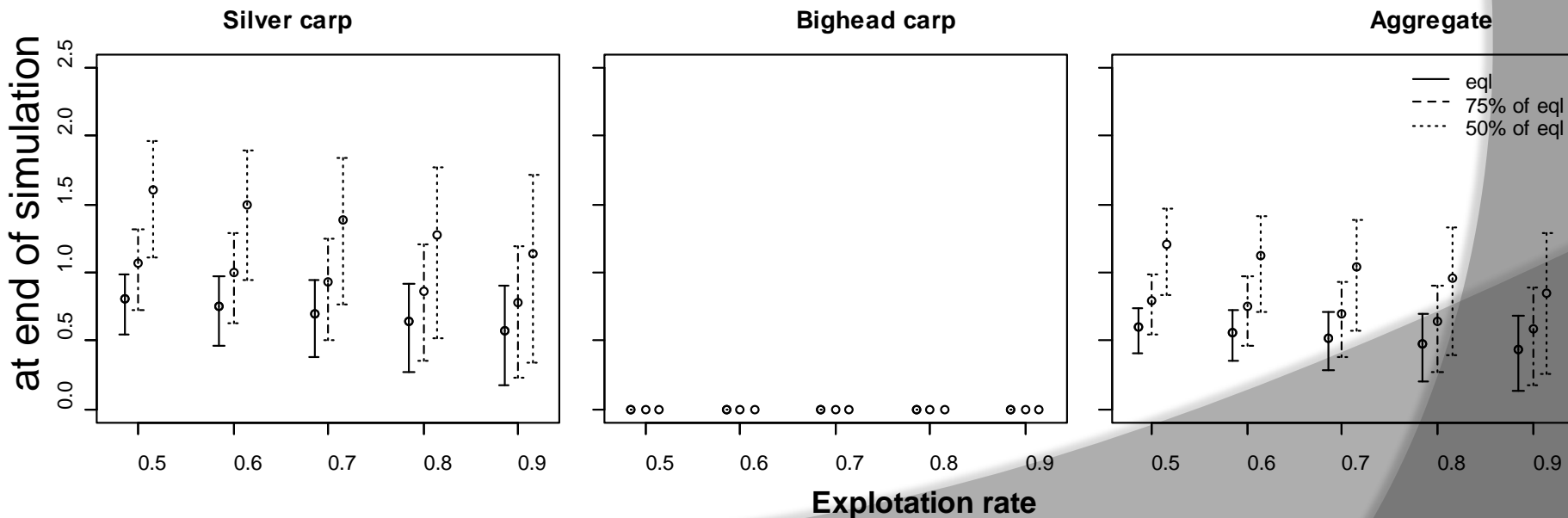


Big River Fish Co. photo

Results of Illinois River population modeling...

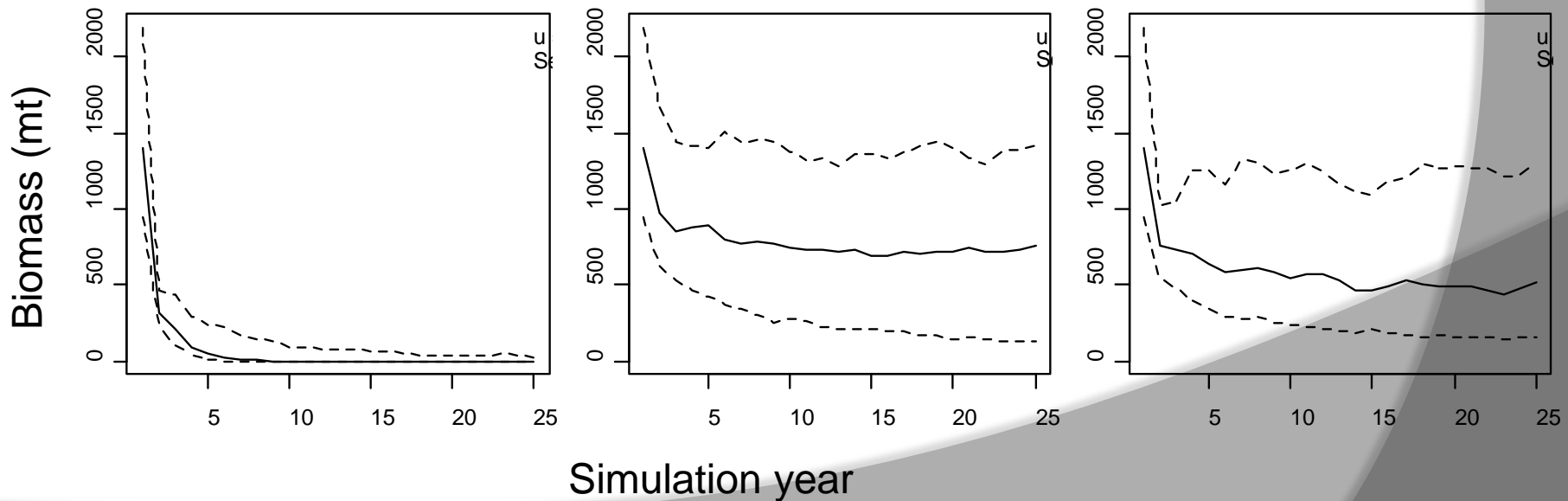
- Bigheads are likely to be more vulnerable to decline than silvers...
- Bigheads make up 90% of commercial catch
- Silvers make up 74% of population

Proportion of initial population at end of simulation



Results of Illinois River population modeling...

- Even at high harvest ($u = 0.9$), aggregate Asian carp populations won't disappear if you harvest only adults or only juveniles
- But if you harvest both...





Heartland
PROCESSING

HEARTLA

Red Swamp Crayfish WATCH



Photo: Paul Stankovikj

Black wedge-stripe on underside (not shown)

Raised bright red spots cover body and claws

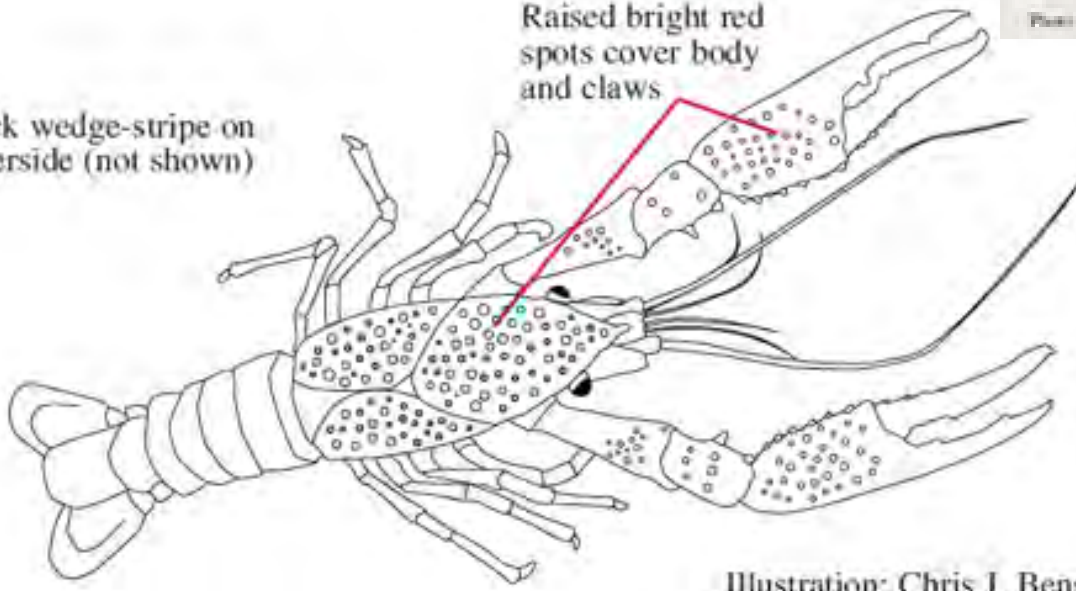


Illustration: Chris J. Benson

Great Lakes Spotted Muskellunge

(a.k.a. Muskie)

- Top predator native to west MI
- Extirpated in many habitats
- Fall 2013 stocking
 - 2,670 Lk. Macatawa
 - 3,000 Grand River
 - 3,857 White Lake
 - 6,876 Muskegon Lake
 - 1,043 Mona Lake



Lake St. Clair is widely regarded as the world's best muskie fishery.



Kyle Anderson
Sept. 27, 2009, Torch Lake
50 pounds, 8 ounces

Michigan's Record Muskie



Joseph Seeberger
October 13, 2012, Lake Bellaire
58 pounds; 59 inches



ALEWIFE







SEA LAMPREY





Acknowledgements

- Dr. Brian Roth, MSU
- Kevin Irons, INHS
- Big River Fish Co.
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- Jim Bredin, ACRCC
- Lynn Vaccaro, MISG



Southwest Michigan News

Fish Notes Newsletter

Southwest Michigan News



Michigan Sea Grant Extension Educators are stationed throughout the state, keeping ahead of water-related issues along our Great Lakes coasts. This page features news from Dan O'Keefe, who covers the southwest district of the state.

The information gathered here focuses on news specific and relevant to west Michigan residents, decision-makers and visitors.

Get west Michigan news sent directly to your inbox!



Regional Contact

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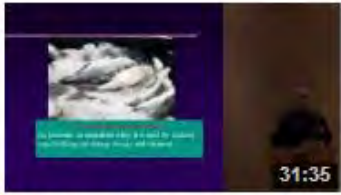
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Salmon and Forage Fish**

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**More Grand River Coho
Salmon**

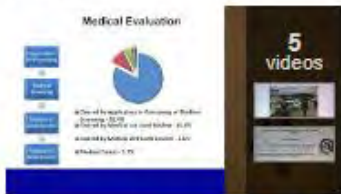
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**Salmon
Part 1**

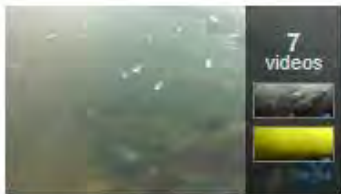
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